

ABSTRACT OF THE DISCLOSURE

A gas separation apparatus which uses electrostatic precipitators and a DC power supply is controlled to optimally remove moderate to high resistivity ash. The DC power supply is pulse width modulated to maximize the product of the peak electric field and the average electric field. The method used to optimize operation includes selecting initial on and off times for the power supply, operating the power supply using the initial off and on times, and progressively decreasing the off time. A determination is made whether the off time may be further decreased. Ultimately, the on and off time intervals that produce the highest peak and average voltage are determined, and the system is operated using these parameters. A procedure may be periodically repeated to monitor the process and detect if there has been a change in the system that would require new time intervals. The novel separation apparatus and control method offer particular synergy when applied to the effluent stream from a coal-fired electric power plant or other similar gas streams.